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When IT Is Asked to Spy

Monitoring fellow employees for improper activity has become a big (and uncomfortable) part of IT's job, says network services manager Barry Thompson.

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Barry Thompson, network services manager at ENE Systems Inc.

JOHN SOARES

COVER STORY

When IT Is Asked to Spy

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HeadsUp

Electronic equipment, such as fish tank controls, can generate signals that interfere with Wi-Fi.

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WIRELESS NETWORKING

iPad Influx Spurs Demand for Fast Wi-Fi

THE FIRST DAY the iPad went on sale in April, half the financial analysts and executives at securities brokerage Baron Funds in Manhattan lined up and bought their own — and then immediately wanted to use them at work.

"They got no reception in the offices and said, 'We need good Wi-Fi,' so I said, 'Let's get a budget for this,'" said Henry Mayorga, Baron's manager of network technology, in an interview.

Mayorga quickly evaluated Wi-Fi gear from Trapeze Networks, Aruba Networks and Cisco Systems. Cisco won out because it could handle various coverage issues, including radio interference from a large electronic control center for elaborate fish tanks that adorn the Baron offices.

Cisco's 802.11 a/b/g Wi-Fi gear couldn't handle the throughput demands of the iPads, Mayorga found, but Cisco's faster 802.11n gear worked — and required fewer access points than the rivals' did. So he installed 18 Cisco Aironet 3502 access points with CleanAir technology to reduce interference.

Mayorga praised Cisco's 802.11n hardware, which cost $42,000, but he rejected Cisco's security software and instead chose Avenda Systems' eTIPS, which cost $15,000.

About 50 Baron analysts use iPads to consume massive amounts of information in the office, but they use desktop computers for creating documents or spreadsheets, Mayorga said.

While iPads are now the "machine of choice" for Baron users, he noted that the firm requires employees to pay for the devices themselves.

– Matt Hamblen

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BUSINESS CONTINUITY

Survey Points to Simple Steps to Avoid IT Outages

IT reseller CDW LLC found that 25% of 7,000 customers polled had experienced a network disruption of four hours or more within the past year.

In a follow-up survey of 200 IT managers who had experienced significant outages recently, half said power loss was the cause. Other common problems were hardware failure and loss of telecom service.

"The survey confirms that while many businesses believe they are prepared for an unplanned network disruption, many are not – and yet the three most common causes of IT outages are addressable," said Norm Lillis, a CDW vice president, in a statement.

Lillis said that with better preparation, testing and network accessibility, most of the businesses could have avoided an outage or responded more quickly when one occurred.

CDW added that businesses need to provide employees with better remote access during emergencies. More than half (53%) of the businesses surveyed said they allow employees to telecommute when a foreseeable disruption, such as a hurricane, is imminent. But only one-third of respondents said they activate standby communications and network systems to support increased remote access when warned of an impending event.

– LUCAS MEARIAN

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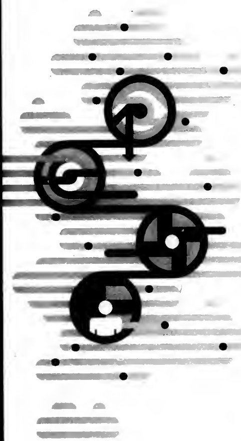

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HEADS UP

BETWEEN THE LINES
By John Klossner

www.jklossner.com
WHAT ATTRACTED YOU to HP? THE CHALLENGE? THE CULTURE? THE PRODUCT LINE?
THE SEVERANCE PACKAGES.
Apotheker
Klossner

THINK TANK

Gartner Warns of App Maintenance 'Debt'

GARTNER INC. said last month that IT departments are incurring an "IT debt" totaling $500 billion worldwide this year because tight budgets have kept them from updating older software.

"Year after year of deferred maintenance means that the application portfolio risks getting dangerously out of date," Gartner analyst Andy Kyte said in a statement. Gartner called it "a debt incurred in previous years that will need to be paid off" in the future by investing in software upgrades.

The research firm defined IT debt as "the cost of clearing the backlog of maintenance that would be required to bring the corporate applications portfolio to a fully supported current release state." Gartner said the debt could rise to $1 trillion by 2015.

Independent analysts Vinnie Mirchandani and Frank Scavo said Gartner's estimates were overblown, contending that the research firm has a history of producing big, scary numbers, like its prediction of Y2K remediation costs.

"There are many good reasons to NOT upgrade/modernize many applications, and I believe Gartner is out of line using words like 'debt' which have guilt associated with them," Mirchandani, a former Gartner analyst, said in a blog post.

Scavo acknowledged in a blog post that "application proliferation and unsupported versions" are big problems. He said CIOs should make an effort to identify software that can be retired, consolidated or turned over to third-party maintenance firms or software-as-a-service providers.

He noted that only strategic applications that provide business value need to be upgraded to current versions on a regular schedule. Companies need to conduct assessments of their software portfolios to determine which applications fall into each category, he said, but he added that it's difficult to get users, top executives and IT to agree on the business value or quality of a particular application.

– Mitch Betts

Micro Burst

Mobile app developers prefer Apple's iOS in the short term, but

59%

said Android has the "best long-term outlook."

CLOUD COMPUTING

Minnesota Moves E-mail to Microsoft's Cloud

The Minnesota state government said last month that it's moving its messaging and collaboration systems to Microsoft Corp.'s hosted Business Productivity Online Suite in an effort to address multiple challenges, including an aging workforce and an increase in red ink.

The move will affect about 33,000 state employees, making it one of the largest public-sector migrations to a cloud environment.

Minnesota's decision follows an 18-month project to consolidate 30 messaging systems, such as GroupWise, Lotus Notes and multiple versions of Microsoft Exchange, to a single Exchange system.

Officials cited several reasons for the move to the cloud, including a need to save money at a time of projected budget deficits. Moreover, the state must deal with the fact that 50% of its workforce will be eligible for retirement in the next 10 years – a situation a that "creates a huge risk in [administering] government services," said Minnesota CIO Gophal Khanna.

The adoption of cloud computing is part of a larger shift from silo approaches that spawned more than two-dozen messaging systems to a more horizontal system that offers shared services, said Khanna.

– PATRICK THIBODEAU

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NEWS ANALYSIS

HP's New CEO Has Software Bent

Apotheker's SAP experience may help HP boost its emerging software business and its standing against growing nemesis Oracle.

By Patrick Thibodeau and Nancy Gohring

WHILE ANALYSTS are split over whether former SAP CEO Leo Apotheker has the experience to run a $120 billion company, most agree that his appointment as Hewlett-Packard Co.'s CEO late last month was a way to tell the world that HP's future is software.

"One of the fastest-growing and [most] profitable parts of HP has been its software business," said Frank Gillett, an analyst at Forrester Research Inc. "Software is where the magic and differentiation get created."

Analysts also pointed out that the hiring of a longtime software company executive is also a message to emerging nemesis Oracle Corp., which acquired HP rival Sun Microsystems Inc. early this year and then hired former HP CEO Mark Hurd within days of his resignation.

HP added to the rivalry by coupling the announcement of Apotheker's hiring with news that it has appointed former Oracle President and Chief Operating Officer Ray Lane, now managing partner at venture capital firm Kleiner Perkins Caufield & Byers, to serve as nonexecutive chairman of its board.

Apotheker's huge compensation package — the same $1.2 million annual salary paid to Hurd, annual bonuses of 200% to 500% of his annual pay, generous stock awards and options, a $4 million signing bonus and $4.6 million to cover the cost of moving from his home in France to one closer to HP's Palo Alto, Calif., headquarters — shows that HP is confident that Apotheker can bring a more international focus and a more software-centric vision to the business, said China Martens, an analyst at The 451 Group.

Nonetheless, she added that the new CEO must move quickly to prove to users and investors that he can "helm a much larger company than SAP with a very wide product portfolio."

HP officials highlighted Apotheker's record in driving software growth at SAP, as well as his support for research and development projects, an area that some analysts believe was de-emphasized during Hurd's tenure.

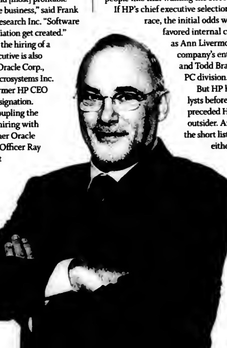
Apotheker resigned from SAP in February after some 20 years at the ERP vendor, whose sales totaled nearly $4 billion in the quarter that ended June 30.

Ray Wang, an analyst at Altimeter Group, said that after Hurd's abrupt resignation in August, HP likely had few strong CEO choices. "HP needed a tech leader, someone who has run a billion-dollar business, someone who has a global perspective and a software perspective to help the company get more into the software business. There aren't too many people like that walking the street," he noted.

If HP's chief executive selection had been a horse race, the initial odds would have heavily favored internal candidates such as Ann Livermore, who runs the company's enterprise business, and Todd Bradley, who heads its PC division.

But HP has surprised analysts before. Carly Fiorina, who preceded Hurd, was also an outsider. And Hurd wasn't on the short list of CEO candidates either, having come from NCR Corp., whose revenues were only a fraction of HP's. ◆

Gohring *is a reporter with the IDG News Service.* **James Niccolai and Marc Ferrante** *of the IDG News Service contributed to this story.*



» Leo Apotheker has his work cut out for him as HP looks to better position itself against Oracle in the software market.

RFID Could Ease Hunt for Lost IT Gear

Emerging RFID tools promise to help IT execs keep track of equipment in ever-expanding corporate data centers. By Patrick Thibodeau

IF CONCERNS ABOUT COST AND SECURITY can be overcome, RFID technology could help solve a growing problem in large data centers: losing track of IT equipment.

Experts note that IT executives at companies with large data centers have long grappled with the problem of misplaced equipment, particularly "ghost servers" that draw power but don't do any work. The problem can be costly, because electricity is wasted and in some cases companies must continue to make lease and maintenance payments on the "lost" systems.

Eric Moore, enterprise data center manager at a regional hospital in Illinois, said that placing RFID tags on IT equipment could make it easier to keep track of machines moved into or out of the data center. Traditional inventories of IT assets, which are generated by staffers who walk from server to server carrying bar code scanners and clipboards, have limited shelf lives because a data center's equipment is constantly changing, he added.

Nonetheless, it would be difficult to justify the expected cost of moving to RFID, said Moore.

Vendors are increasingly mounting efforts to convince users like Moore that RFID technology can be cost-effective because it automates inventory-tracking tasks.

Just last week, at Afcom's Data Center World conference in Las Vegas, two vendors released RFID tools designed to track IT equipment.

Methode Data Solution Group introduced a system called U-Track that has passive RFID tags that can be placed on each server in a rack. The tags are activated by a signal from an RFID reader. Pricing for U-Track ranges from $200 to $400 per server rack.

Meanwhile, RF Code Inc. unveiled a system that uses active RFID technology and tracks server locations by sending out a beacon to a reader. Each tag costs about $14.

"I would love to use RFID, but it's not in the budget," said Scott Nahman, a data center manager with a federal government agency he asked not be identified. Nahman said his shop uses bar code scanners to track equipment. If anything isn't in its place, staffers "don't go home from work until it's found," he added.

Security concerns are preventing companies such as MSR Engineering and Development Ltd. from using RFID technology. MSR senior project manager Rosner Mehahem said some of the Israeli company's public sector customers don't like active RFID tags because they believe the transmissions can be retrieved outside the data center. ◆

I would love to use RFID, but it's not in the budget.

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THE Grill

Patrick Moore

This state CIO has something to teach corporate America about managing priorities.

The most interesting thing people don't know about you: I held the record for winning the county spelling bee for Pickens County, Ga. I won five years in a row, every year I was able to compete. I believe it was from fourth to eighth grade.

What do you do in your free time? I spend a lot of time with my family. I have a 4-year-old boy, Matthew, who's into soccer and karate, and a 5-month-old boy, McCaidan. My wife's name is Kristan. And I love to be outdoors and fly-fish.

Ultimate career ambition: What I'd love to do is turn around troubled organizations. I'd like to work at a private equity firm and manage a portfolio of companies that we're trying to fix.

PATRICK MOORE, *36, CIO for the state of Georgia and executive director of the Georgia Technology Authority (GTA), is in charge of transforming the governance and effectiveness of IT for Georgia's state government. As part of that effort, Moore spearheaded the consolidation and privatization of the state's IT infrastructure and managed network services, making Georgia only the second state to do so.*

A Georgia native, Moore became interim CIO in September 2006 and permanent CIO in February 2007. Prior to joining the GTA, his résumé included a stint as deputy chief operating officer and deputy chief of staff for Georgia Gov. Sonny Perdue.

What are the biggest challenges facing public sector CIOs right now? Governance and the understanding that multiple stakeholders have a role in technology are the two biggest challenges that state CIOs have. If you can foster understanding across a broad

Continued on page 10

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The conclusion was that we were carrying too much risk, and in order to make timely changes, we had to go to the market, we had to outsource.

Continued from page 8

stakeholder group on why you need enterprise governance, then conversations around why you need dollars tend to be more productive. I have multiple agencies that I have to provide services to. But I also have a boss — the governor — and then I have numerous stakeholders in the legislature. So governance and fostering an understanding of where technology should sit on the priority list across multiple stakeholders — those are the difficult challenges that state CIOs face.

What are their biggest opportunities? I think the challenge is the opportunity: the ability to consolidate and the ability to create improved governance across an enterprise. It provides a standardization of the technology, which can provide improved efficiencies and cost savings to the agencies and the citizens you serve. We're in the middle of a large privatization effort. We're anticipating $2 million in savings over the next 10 years, and that's something the state couldn't see without this program. Is that the primary reason we're doing it? No, it was to reduce risk. But we will see these savings because we have a better way to buy and serve this technology, and that means we can keep our costs down.

What lessons could public sector CIOs teach CIOs in corporate America? Stakeholder management. We have not only our own organization; we have agencies and elected officials we have to manage. And that squares into the second point, which is managing complex change. How do you speak to and inform them and keep them with you as allies as you go through change in a complex enterprise?

Opinions about the state of the Georgia IT department when you became CIO were far from flattering. One study used the phrase "dysfunctional organization." What were the main problems when you started in 2006? They were numerous. First of all, we were in lines of business we didn't belong in. [For example] we were running a phone company. And when you dug deeper, it was clear we didn't have proper processes in place to manage. We didn't have the right skill sets. Our infrastructure was aging — 50% to 60% was six to 10 years old. We had a large number of employees who were close to retirement, and we had to fill critical skill gaps in the next two to three years. And our infrastructure was poorly run and poorly managed. We had servers in rooms that were at risk of overheating every day in the summer.

You decided to outsource most of the state's IT infrastructure in 2008, making Georgia the second state to do so, after Virginia. How did you sell such a bold move? It started with gathering the facts. This was not a very transparent environment. It was filled with anecdotes and a lot of folks who didn't have the needed processes in place. We brought in [business consultancy] TPI, and we asked them to scan our environment and help us determine how much we were managing, how it was being managed and what our options were.

The conclusion was that we were carrying too much risk, and in order to make timely changes, we had to go to the market, we had to outsource. And during the assessment process, we were constantly communicating with employees in other agencies, we were talking with agency heads, we were talking with the legislature, we were informing the governor's office and providing ongoing updates about the assessment. As we began to develop solutions, we brought the agencies in to help us. Those employees helped us write the RFPs, so they reflected not what [our department] thought but what the agencies thought needed to be fixed.

In July you wrote in a blog that "the state of Georgia continues down its path towards a mature technology enterprise." How will you know when the state has achieved that vision? When we can see where all the technology dollars in the state are going, when the government and the legislature are making technology decisions that reflect the need to invest, and when we have more customer-facing applications that allow our citizens to interface with government in an electronic manner.

Are you there yet? No. The next five years is how long it will take us to get there. We've made a tremendous amount of progress in the past few years. We still have a long way to go; we still have a lot of training to do. We have a lot of education to do with our other stakeholders. It's a journey, and I don't know if it ever ends.

– *Interview by* Computerworld *contributing writer*
Mary K. Pratt *(marykpratt@verizon.net)*

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OPINION

THORNTON A. MAY

Get Ready for the Evolution of IT Excellence

As data growth outstrips growth of resources to manage it, we have to get better at what we do.

IF YOU'RE in IT, you can relate to the old Pennsylvania Dutch saying, "The hurrier I go, the behinder I get." Our world is getting crazy. Researchers warn that the amount of information we're responsible for will reach 35 trillion gigabytes by the end of this decade — meaning it will grow by a factor of 44. Meanwhile, IT head count is forecast to expand by a factor of just 1.4 during the same time period, according to IDC. In most organizations, IT is responsible for designing and leading the processes whereby all of that information is rendered actionable, and it's charged with monitoring the mechanisms that ensure that information assets are curated with appropriate care and diligence. If we are to do that job — indeed, if we are to keep our jobs — something is going to have to change. We're going to have to get an order of magnitude better at what we do. IT excellence has to evolve.

To be successful, IT executives have to transit both the curve of the present and the curve of the future; that is, they have to simultaneously create the new and manage the old. They have to operate simultaneously in at least three fundamentally different technology time zones: new systems about to be deployed, existing systems in production, and older systems about to be retired. Sadly, many IT workers are so buried with the work that must be done just to keep the lights on that there's no time to even consider the learning curve associated with what comes next.

As I have repeatedly said on these pages, the first step on the path to the next stage of IT excellence is to have a map. In the popular mind, leadership is all about movement, and to demonstrate movement, you need to establish in the minds of your stakeholders where you are now and where you're going. Whether you use milestones or "project pebbles" (that is, very granular day-to-day metrics that tell your audience, "This is how far we have gone"), you need a schema that documents that progress is being made. Unfortunately, as many as 60% of IT shops don't have the points of reference to confidently ask, as Ronald Reagan did in 1980, "Are you better off than you were four years ago?" When asked how things are going, workers chained to the curve of now can only gasp, "Busy, very busy," and return to the task at hand.

Relationships Matter

Having a map is just the beginning. Career autopsies of failed CIOs and case studies celebrating IT leadership successes highlight the importance of interpersonal relationships. Relationship management is a white-hot theme in management literature today. Everyone knows that all the great leaders have a great human network backing them.

But not all relationships are created equal. Stephan Chase, vice president of customer knowledge at Marriott, reminded a group of CIOs at the IT Leadership Academy about Aristotle's three-stage hierarchy of social interaction, in which the most basic relationships are those of utility. They are superficial and contractual "I pay you to do something" relationships. Next are relationships of pleasure: There is utility involved, but one takes pleasure in the company of the other party. The highest form involves shared virtue and is achieved when both parties have an authentic concern for the needs of the other. If you can't build shared-virtue relationships, IT excellence will escape you. ◆

Thornton A. May is the author of *The New Know: Innovation Powered by Analytics* and executive director of the IT Leadership Academy at Florida State College at Jacksonville. You can contact him at thorntonamay@aol.com.

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When IT Is Asked to Spy

IT managers are being put in the awkward position of monitoring fellow employees.

By Tam Harbert

IT'S 9:00 IN THE MORNING, or 3:00 in the afternoon, or even 10:00 at night. Do you know what your users are up to? More than ever, IT managers can answer, "Oh, yes."

As corporate functions, including voice and video, converge onto IP-based networks, more employee infractions are happening online. Employees leak intellectual property or trade secrets, either on purpose or inadvertently; violate laws against sexual harassment or child pornography; and waste time while looking like they're hard at work.

JOHN SOARES

» Monitoring co-workers is "a difficult position to be in, but it does come with the territory," says Barry Thompson of ENE Systems.

In response — spurred in part by the need to comply with stricter rules and regulations — organizations are not only filtering and blocking Web sites and scanning e-mail. Many are also watching what employees post on social networks and blogs.

They're collecting and retaining mobile phone calls and text messages. They can even track employees' physical locations using the GPS feature on smartphones.

More often that not, IT workers are the ones asked to do the digital dirty work, primarily because they're the people with the technical know-how to get the job done, says Nancy Flynn, executive director of The ePolicy Institute, a Columbus, Ohio-based consultancy that helps companies establish Internet and computer usage policies.

Statistics are hard to come by, but Flynn and other industry observers agree that monitoring and surveillance are becoming a bigger part of IT's job.

Michael Workman, an associate professor at the Florida Institute of Technology who studies corporate IT security and employee behavior, estimates that monitoring responsibilities take up at least 20% of the average IT manager's time.

Yet most IT professionals never expected they'd be asked to police their colleagues and co-workers in quite this way. So, how do they feel about this growing responsibility?

Workman says he sees a split among tech workers. Those who specialize in security issues feel that it's a valid part of IT's job. But those who have more of a generalist's role, such as network administrators, often don't like it.

IT managers interviewed for this story hold a wide variety of views, ranging from discomfort at having to baby-sit their co-workers to righteous convictions about the need to protect the integrity of their companies' systems.

The Reluctant Beat Cop

Monitoring employees has become a bigger part of IT's job at ENE Systems Inc., an energy and building automation company in Canton, Mass. A new state law regarding the security of personal data has increased the importance of monitoring online activity, says Barry Thompson, network services manager at the $30 million company, which has 140 employees.

Previously, Thompson checked the logs from the company's Microsoft ISA (Internet Security and Acceleration) Server, which tracks what Web sites people access, only if a supervisor suspected an employee of violating the company's stated policies.

Now, one of his five IT staffers regularly reviews the logs, even without a specific request. "That's all he does for one day a week," says Thompson. "He goes through the logs to see if there's anything in there that needs to be exposed or discussed." Activity related to porn, gambling or hate speech automatically raises red flags, he says.

Thompson and his staff aren't exactly comfortable with this task. "We're IT guys. We're not baby sitters," he says. "It's a difficult position to be in, but it does come with the territory."

It helps that his IT staff isn't responsible for confronting violators, only finding them. If a problem pops up, the IT staff reports it to Thompson, who then determines whether to report the violation to the employee's supervisor.

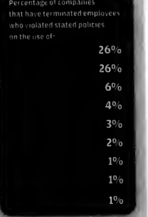
He's like the neighborhood beat cop, who might catch kids stealing from the corner store but let them off with a warning the first time. "I do it on a case-by-case basis, based on my own gut feeling about what [the violator is] telling me," he says. "I'm a pretty good judge of whether or not someone's lying."

In the 10 years he's been with the company, Thompson says, he has officially reported inappropriate Internet usage to a supervisor on just two occasions.

The reason for that low number? "We regularly communicate to the rank-and-file employees that all Internet access is monitored and logged, so they know they are being watched," Thompson says. "In my view, that keeps the majority of people honest."

Corporate Crackdown

Not only do corporations appear to be monitoring their employees more frequently and more closely, but they're also punishing violators more severely when they do get caught. Some are even terminating employees who violate company policies.



BASE: [illegible] COMPANIES

SOURCE: SURVEY BY THE AMERICAN MANAGEMENT ASSOCIATION AND THE EPOLICY INSTITUTE, JULY 2009

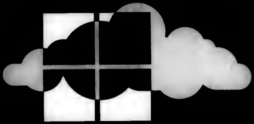
In addition to energy and automation systems, ENE offers IT services, including Web site development and e-mail. Thompson says he's seen increased interest in employee monitoring among ENE's customers, which include large institutions such as the Boston public school system and State Street Bank. "More and more frequently, our customers want to know, 'What was that guy doing when [his computer] got that virus?' for example," he says.

One customer put Thompson in an ethical dilemma when it asked ENE to secretly install SpectorSoft Corp.'s surveillance software on its employees' PCs. SpectorSoft records everything: e-mails, IMs, Web site visits and searches, programs run and files transferred. It even logs keystrokes and takes screenshots.

The owner of the company, a landscaping firm, wanted Thompson's staff to lie if employees asked what they were installing on the PCs. (Although most companies spell out monitoring policies in employee manuals, only two states — Delaware and Connecticut — actually require that companies notify employees that they're being monitored.)

Thompson refused. "What he asked us to do crossed the line," he says. "I told him, 'We'll install the software, we'll help

Continued on page 20



Lotus knows you can't truly appreciate a cloud from behind windows.

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Continued from page 16

you use the software, we'll help you monitor your employees. If somebody does something wrong, we'll help you collect the information to fire them. But we're not going to look your employees in the eye and lie about what we're doing.' "

Thompson says the customer was "a bit unhappy" but accepted his position.

The Legal Eagle

"Daryl" — who requested anonymity — is an IT manager at a midsize industrial manufacturer in the U.K. He strongly believes that IT has the right, and the duty, to monitor employee activity in order to protect the interests of the company.

He once caught an employee engaged in criminal activity involving intellectual property that could have resulted in a big financial loss for the company. He went to the CEO, and the employee was dismissed. The employer didn't press charges, however, because "it would've been embarrassing for the company," Daryl says.

Daryl's complaint isn't that he has to police employees, but that he's not allowed to do it properly.

His graduate-level college studies in IT security and forensics taught him how to properly preserve electronic evidence so that it is admissible in U.K. courts. For the information from a laptop to be admissible, he says, the hard drive needs to be removed and cloned, and then the clone is examined while the original evidence is left untouched.

But his bosses aren't interested in that. "The process my managers want me to follow is inappropriate," he says. They want him to skip the cloning and examine hard drives directly. "It's highly unlikely that they would ever be able to bring a successful prosecution [because] they insist on using a practice that would invalidate any evidence obtained," he says.

The Conscientious Objector

"Our department philosophy is that if the users fear us, the job gets 10 times harder," says Dan Olson, IT director at Farstad Oil Inc., a Minot, N.D., company with 500 employees. "Fear leads to coverup and spin. When we are trying to find [the cause of] a problem, what we need is the truth."

Fear of IT used to be a problem at Farstad. In the mid-1990s, after an employee was caught spending too much time in chat rooms, IT was directed to monitor employees and report those who did non-work-related activities on their PCs.

"We had never agreed to that, nor were we consulted on it," Olson says. He mostly ignored the directive, partly because it was never a written policy. Nonetheless, he says, "the next two years were miserable for [IT], as everyone feared that we would assume they were guilty until proven innocent."

At one point, management became concerned that employees were using instant messaging for personal business. A memo cautioning employees about this caused even more anxiety. "I remember people clicking their mice and quickly closing windows as I walked by," says Olson.

That fear was counterproductive, he says. If employees' PCs caught a virus, for example, he had trouble getting them to say what they'd been doing or what Web sites they'd visited.

Shortly thereafter, Olson persuaded management to ease the restriction. "We explained that we wouldn't be watching [workers] all the time. We would only check the logs if their manager complained that they weren't getting their work done," he says.

The new policy has made for much better working relationships between employees and the IT staff, he notes, with employees more willing to inform IT promptly about technology snafus and IT able to get the information it needs to remedy the problems.

Get Used to It

In the future, companies like Farstad that have policies that favor minimal monitoring are likely to be in the minority. Observers say IT managers can expect to be asked to take on even more monitoring duties, such as reviewing surveillance videos, examining text messages, tracking employees' whereabouts via GPS or monitoring activity on social media.

Will IT managers resist this expansion or chalk it up to just doing their jobs?

Florida Institute of Technology's Workman doesn't envision much pushback. "I see them doing it," he says, "but I don't see them being completely comfortable with the practice ◆

Harbert *is a Washington, D.C.-based writer specializing in technology, business and public policy. You can contact her at her Web site, TamHarbert.com.*

Our department philosophy is that if users fear us, the job gets 10 times harder.

DAN OLSON, IT DIRECTOR, FARSTAD OIL INC.

Surveillance Done Right

Experts recommend taking the following steps to ensure that your company's employee-monitoring program is on solid ground:

- **Adopt a formal, written Internet usage policy** that spells out what employees are and are not allowed to say and do via e-mail and on the Web, including blogs and social networks.
- **Explain the rationale behind the policy.** Point out that what employees say and do online can put the company at risk legally, for example. Also, state specifically what is being monitored and how, and lay out the consequences of violating the policy.
- **Require new hires to read the policy, but also conduct ongoing training and awareness programs** to make sure all employees keep the policy in mind.
- **Establish clear procedures to follow when IT discovers violations.** Determine who should report the violation and to whom, how it should be documented and who will confront to the violator.
- **Try to get the IT, legal and human resources departments involved** in developing and enforcing the policy.

IT professionals should remember that they're being monitored, too. "[IT staffers] might be surprised to learn that someone is watching the watcher," says Larry Ponemon, founder and chairman of Ponemon Institute LLC, a data privacy and security consulting firm.

– TAM HARBERT

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FOCUS on driving

Quick STUDY

4G Wireless

WiMax and LTE are fourth-generation cellular technologies that can transmit high-quality video. **By Russell Kay**

DEFINITION

WHEN SMARTPHONES came into wide use for Internet access and data transmission, consumers and carriers quickly recognized the need for faster, more reliable wireless data networks with broader geographical coverage. The current mobile telecommunications technologies, collectively known as 3G, for third generation, emerged about 10 years ago. At long last, successor technologies are now entering commercial service. The whole idea behind 4G is that it will offer very fast, widely available broadband.

The two main 4G technologies are WiMax and Long Term Evolution. WiMax is a wide-area standard from the IEEE. LTE is the latest standard from 3GPP, an industry group that brought out the earlier 3G networking technologies.

Both WiMax and LTE use advanced antenna technology to improve reception and performance, but each uses different parts of the wireless spectrum. Neither will operate at current cell phone frequencies, and neither natively supports voice transmission. Therefore, today's 4G phones must include a 3G chip to handle voice calls and enable roaming between carriers and geographic areas.

As of last month, Sprint Nextel Corp. was the only carrier offering 4G service in the U.S. To deliver that service, Sprint uses WiMax technology on the Android-based HTC EVO 4G and Samsung Epic 4G phones. Verizon Wireless has said that it expects to ship LTE phones by mid-2011.

Different providers can choose different 4G technologies, but their offerings typically provide four to 10 times the throughput of 3G networks. The faster downloads and better streaming of 4G accommodate the quality-of-service and rate requirements for existing 3G applications and will significantly improve the performance of demanding applications such as video, chat, videoconferencing, multimedia messaging, networked gaming and HDTV.

In the future, users may be able to replace their home broadband service with a 4G service that could also be used on the road. It might be cheaper to have WiMax 4G service rather than home service plus a 3G wireless plan. Developers are aiming for download speeds of 100Mbit/sec. with 4G, but products capable of that level of performance probably won't appear for a few years.

One eventual goal is for 4G to enable pervasive computing — currently a hypothetical concept — where multiple simultaneous high-speed network connections will provide users with seamless handoffs throughout a geographic area. ◆

Kay is a Computerworld *contributing writer in Worcester, Mass. Contact him at russkay@charter.net.*

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« The HTC EVO 4G phone uses Sprint's WiMax network.

4G: [illegible]?

4G service is currently available in [illegible] and Russia have WiMax networks, and [illegible] running in Sweden. Here's a rundown of [illegible] the U.S.

- **AT&T Inc.** plans to use LTE [illegible] upgrades to 4G in 2011, but for now it's sticking with its [illegible] 3G [illegible]
- **Verizon Wireless** is testing LTE equipment [illegible] dors, and it plans to begin rolling out [illegible] of the country by 2012. The company [illegible]
- **Sprint** is partnering with [illegible] 4G service in nearly 50 major U.S. [illegible] plans typically include unlimited data [illegible] charge extra for downloading more [illegible] based plans are commonly $10 [illegible] data plans. Clearwire recently [illegible] systems that incorporate both LTE [illegible]
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- **U.S. Cellular** will probably use [illegible] when it offers [illegible] it hasn't announced a schedule for doing so.

SOURCES: NEWS REPORTS, [illegible].COM AND PC WORLD

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Quick STUDY

4G Wireless

By Russell Kay

DEFINITION

4G, the fourth generation of cellular wireless standards, will provide high-speed transmission that supports high-quality streaming video. 4G technologies include WiMax and Long Term Evolution (LTE). 4G is not backward-compatible with 3G, but it uses spectrum more efficiently.

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4G: Who's Got What?

4G service is currently available in several countries. Japan, Korea and Russia have WiMax networks, and a commercial LTE network is running in Sweden. Here's a rundown of 4G plans in the U.S.

- **AT&T Inc.** plans to use LTE when it eventually upgrades to 4G in 2011, but for now it's sticking with its current 3G network.
- **Verizon Wireless** is testing LTE equipment from several vendors, and it plans to begin rolling out 4G this year and to cover most of the country by 2012. The company hasn't announced LTE pricing.
- **Sprint** is partnering with Clearwire Corp. to offer WiMax-based 4G service in nearly 50 major U.S. markets. Clearwire/Sprint's 4G plans typically include unlimited data access, whereas most 3G plans charge extra for downloading more than 5GB per month. Clearwire-based plans are commonly $10 to $20 per month cheaper than 3G data plans. Clearwire recently announced an effort to roll out and test systems that incorporate both LTE and WiMax technologies.
- **T-Mobile USA** is launching a 3G variant (sometimes called 3.5G) in 100 U.S. cities. The carrier is expected to offer LTE services sometime in the future, but it has not set a specific date for doing so.
- **MetroPCS Communications Inc.** plans to introduce LTE in Las Vegas before 2011 using a dual-mode 3G/LTE phone by Samsung.
- **U.S. Cellular** will probably use LTE when it offers 4G service, but it hasn't announced a schedule for doing so.

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no-

HARDWARE

Getting rid of old tech equipment now takes as much **forethought** as purchasing it in the first place did.

By Cara Garretson

INFORMATION technology departments that practice asset management are learning to master the art of retiring hardware at the right time. But making the decision to retire IT gear is just the beginning; tech managers must then figure out what to do with the systems that are past their prime.

Gone are the days when IT managers brought used laptops home to their kids or companies sent trucks loaded with old monitors to the local recycling center (or, in even earlier days, to the dump).

Now, thanks to privacy laws, environmental regulations, software licensing rules and other factors, disposing of IT equipment properly requires companies to spend significant time and sometimes significant money.

Here's a look at everything you need to know about hardware disposal, 2010-style.

Review Your Corporate Options

There are myriad ways to get rid of old hardware, but not all of them are equally viable in the eyes of corporate IT. For example, refurbishing PCs and laptops for internal reuse is one option, but few organizations do this themselves, IT experts say.

Buying brand-new systems doesn't cost very much these days, whereas refurbishing systems internally can be costly and time-consuming and may require a significant amount of expertise.

When it comes to larger items like data center equipment, some vendors now offer to haul away old systems to recycle or refurbish when a customer buys a new system (much like big-box retailers do with home appliances), but this practice isn't yet widespread.

Giving or selling old equipment to employees for personal use is another option, although IT professionals interviewed for this article say their companies don't do that, because of the cost and effort required to make old equipment truly usable.

That leaves recycling, donating and reselling (whole systems or parts, individually or in bulk) as the three most manageable hardware-retirement options for most companies.

Even after they've whittled down their disposal options, fewer companies than ever are going it alone.

While smaller companies with less hardware may be able to handle disposal tasks themselves, enterprises with tens or hundreds of thousands of PCs in locations across the globe are more likely to call in a third party to handle whatever option they choose.

"You need a partner in this, because it's getting harder and harder," says Michael Lechner, managing director of project services at PricewaterhouseCoopers LLP in Tampa, Fla., who relies on multiple outsourcers to deal with the old equipment for PwC's 40,000 users around the globe.

Typically these outsourcers — called "IT asset disposition" vendors (rather than disposal vendors) — will repurpose or resell any components that are still viable. For the portions of, say, a PC that have no market value, the outsourcer will sell the steel to a custom house or a mill, which typically shreds it for reuse. Plastic is sold to processors that might turn it into pellets, and copper is sold to brass or copper mills, according Robert Houghton, president of Redemtech Inc., a Columbus, Ohio, outsourcer that provides asset management and life-cycle planning services.

In the end, virtually nothing is thrown away. "There may be a very small amount of material left over, which would be considered fluff — maybe 1% to 2% of the weight [of the original asset] that has to be disposed of in hazardous waste landfill," says Houghton.

As the market becomes more crowded, some providers of disposition services have begun cutting corners, causing industry watchers to recommend that companies ask their outsourcers to prove they're disposing of assets in a legal and environmentally responsible manner.

» **"There's no way I want a Marriott asset disposed of inappropriately against local or state laws and regulations,"** says Marriott's Sharon Dorsey, pictured here with Dan Blanchard, vice president of enterprise IT operations.

Cash in the Closet?

SOME ORGANIZATIONS can earn a profit, or at least reduce the amount they have to pay to dispose of IT equipment, by allowing providers of IT disposal services to sell the assets they take away.

Sharon Dorsey, senior director of information resources at Marriott's technology sourcing and life-cycle management group, says Marriott's outsourcers resell entire systems, components or materials broken down into bulk plastic or metal, then charge the hotelier for items disposed of and reimburse it for proceeds from the resales, minus a commission.

"These vendors will charge a standard fee for desktop, monitor [or] printer. We have a set fee we've negotiated," Dorsey explains. "If they do a resell, they do it on commission, and they get *x* percent of the sale," says Dorsey, who declined to provide further details because Marriott is in the middle of negotiating a new contract in the U.S.

When PricewaterhouseCoopers' outsourcers resell systems like PCs or notebooks, which are relatively easy to refurbish and resell and are often in demand, PwC might share in that profit or receive carbon credits in exchange, says Michael Lechner, managing director of project services. However, this only works for equipment that's still popular. "Anyone trying to get rid of an old tube monitor would have to pay for it to be disposed," he says.

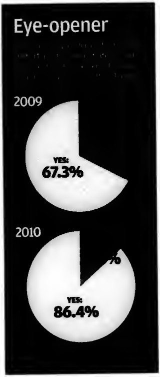
— CARA GARRETSON

Protect Company Data

Regardless of what a company plans to do with its old equipment and whether it contracts with a service provider, the first step on the road to disposal is to protect corporate information by removing all data from hard drives.

"From an information protection perspective, it's imperative that our assets are scrubbed, no matter what we're planning to do with them," says Sharon Dorsey, senior director of information resources at Marriott International Inc.'s technology sourcing and life-cycle management group. There are plenty of off-the-shelf programs that will wipe hard drives, but Dorsey recommends using products that adhere to U.S. Department of Defense standards for data cleansing. "The minimum [number of wipes] for DOD standards is three, but seven is optimal," she says.

Even though data removal is part of the package offered by disposal service providers that Marriott contracts with around the world, Dorsey's team still wipes drives before they leave the company "as an extra step to limit risk," she says.



Protect the Environment

IT employees at Marriott may take a first pass at wiping hard disks to protect company data, but when it comes to protecting the environment, the company completely entrusts to contractors the job of making sure the equipment is taken care of in an environmentally sensitive manner. In the U.S., Marriott uses Intechra Group LLC.

"There's no way I want a Marriott asset disposed of inappropriately against local or state laws and regulations. There's environmental risk," Dorsey says. "A company like Marriott, with 3,400 locations in 68 countries, doesn't have the manpower to do this. Most of the [disposal] companies we deal with are large and have a presence not only in the U.S. but outside of it, too, and they stay current with the local regulations."

For smaller companies that operate only in the U.S., ensuring that assets are properly recycled is an easier process, because there are fewer conflicting regulations and there is less equipment to deal with. Still, it's essential to monitor the process, particularly for companies that have green reputations to maintain.

Companies that use outsourcers need to be sure that the service providers are recycling and disposing of components properly. According to the Basel Action Network, which focuses on issues of global e-waste, as much as 80% of electronics that are collected to be "recycled" actually end up on barges bound for countries like China, Vietnam, Nigeria, Ghana and India. Typically, the e-waste sits in landfills, since many of those countries don't prohibit such practices.

To help prevent that kind of behavior, the Basel Action Network offers certification through its e-Stewards program to help identify service providers that responsibly recycle and reuse electronics.

Some companies go as far as tracking the disposal

You need a partner in this, because it's getting harder and harder.

MICHAEL LECHNER, [illegible]

We have a zero-landfill policy, and we take the long view on recycling.

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If you're dealing with thousands of computers, [retiring equipment in-house] is hard.

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process, even when it's being handled by a trusted third party. Financial services company Citigroup Inc., for example, has a variety of disposal methods for the IT equipment used by its 300,000 employees around the world.

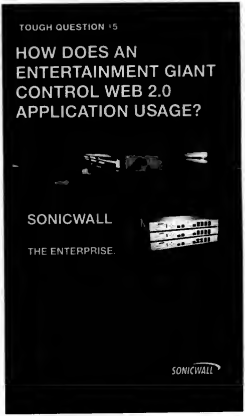
If an aging system isn't recovered for reuse, and if resale isn't an option, the equipment will be "demanufactured" by one of the company's three main outsourcers, explains Jim Brown, senior vice president responsible for desktop asset management at Citi.

Brown, who is based in St. Louis, says he works closely with his providers to understand exactly where all of the materials in discarded equipment end up. "They tell us where the metals go — that a component went to this plastics company. Some of it goes to Trex, which makes plastic boards, some of it is used to make pontoons on docks," he says. "We have a zero-landfill policy, and we take the long view on recycling."

Citigroup set up its disposal process so that internal customers are encouraged to recycle, he says. The company's department managers must account for the cost of equipment disposal in their budgets, so the more they can reuse within their departments, the less they have to pay.

Brown established a centralized system whereby the disposal outsourcer pays Citigroup residuals on the components that can't be reused in their current form, based on the going prices of the broken-down commodities — plastics, some precious metals and paper. Last year, Brown says, those payments more than covered the cost of disposal and actually became a source of revenue.

For true cradle-to-grave environmentalism, companies need to be mindful of not just the recycling and disposal process, but of the entire life cycle of the equipment.


TOUGH QUESTION #5

HOW DOES AN ENTERTAINMENT GIANT CONTROL WEB 2.0 APPLICATION USAGE?

SONICWALL

THE ENTERPRISE.

SONICWALL

Consider the Repurpose Route

As part of its IT equipment purchasing process, Seventh Generation Inc., a maker of green household and personal-care products, considers whether IT equipment can be recycled and the environmental impact of the process the vendor used to manufacture the system, says Nancy Stoddard, vice president of IT at the Burlington, Vt.-based company.

"People need to think about the whole picture, from the beginning to the end — not only the hardware, but the [vendors] you're purchasing the hardware from: Are they being green?" she says. "Apple until very recently was behind the game, for example, and now they're ahead of it."

If the systems are going to be repurposed, the company wipes away the data, cleans up the machines and reimages them with the software they came from the factory with, explains Adam Quinn, manager of IT support at Seventh Generation.

Seventh Generation does all of the retiring of equipment itself. Since the company has only about 100 employees, that's not such a daunting task. "If you're dealing with thousands of computers, it's hard," Stoddard says.

However, size can have its advantages. Citigroup, for example, leverages its clout with large vendors like Microsoft Corp. so it can transfer software licenses along with equipment that it's donating, says Brown, explaining that donations are facilitated through its Citi Foundation charitable arm.

When it comes to repurposing, the Indiana Office of Technology is able to keep alive much of the technology equipment that has grown too old for its own 26,000 users by giving it to the state's school systems, says Paul Baltzell, director of distributed services.

"Schools use [older] PCs in classes where students are learning to keyboard and not doing complex things. Or someone in the office uses them, or if someone is learning to fix computers," he says. "That way we're getting a second life out of our PCs."

The state works with two outsourcers, Unicor and Workforce Inc., to dispose of whatever equipment isn't passed along to school systems. At no cost to Indiana, these companies pick up old IT equipment, disassemble it, sell what can be sold and recycle the rest — but they don't share any of the proceeds from sales with the state either, says Baltzell.

As complicated as the process of properly retiring old hardware is, it's important to spend the time and money figuring out what works best for your company. "Over the last couple years, it's become a bigger deal," Lechner says, "and we're getting better at it." ◆

Garretson *is a freelance writer in the Washington, D.C., area. She can be reached at caragarretson@gmail.com.*

The Altamonte Springs water tank data center: Wings were added to each side, one for networking equipment, the other for administrative offices.

BUSINESS CONTINUITY

Liquid Storage

By building a hurricaneproof data center in a water tank, a Florida city saw its problems with downtime evaporate and the savings pour in.

By Lucas Mearian

AFTER DISMANTLING the city's data center and moving it three times to avoid hurricanes, the IT team for the city of Altamonte Springs, Fla., decided to try a different approach. Instead of spending millions of dollars to build a facility that would keep water out, they relocated the data center to an existing structure that was originally designed to keep water in — a 770,000-gallon water tank.

Larry DiGioia, director of information services for the central Florida city of 45,000, says the move made perfect sense. The dome-shaped tank offered 8-inch-thick walls of reinforced concrete and was situated only 100 feet from City Hall, where a single server room housed the city's previous data center.

Larry DiGioia

Along with vendor partners, DiGioia and his 10 IT staffers built a completely virtualized environment, dramatically increased network throughput, and reduced the physical server count and storage-area network (SAN) management requirements.

Compared with the old setup, the new infrastructure offers improved uptime and superior disaster recovery capabilities.

Anthony Apfelback, the fire marshal and building official for Altamonte Springs, says the upgrade not only eliminated recurring intranet downtime, but also allowed his department to roll out several new applications that automated the permit-issuing process, reducing labor costs.

"Before, it was constant downtime. We would lose our network system for a day and sometimes two days," he says. "Since Larry came in, it's been night and day. Every aspect of the system has improved dramatically. We've had no downtime."

Bob Laliberte, an analyst at Enterprise Strategy Group, says that for state and local governments strapped for cash, using existing infrastructure or sharing facilities with surrounding communities is a practical step. "Everyone's looking to find newer, greener ways of building data centers and looking at the natural landscape to do that," he says.

Altamonte Springs isn't the only place where you'll find data centers that take advantage of existing or natural structures. Information management service provider Iron Mountain planted its main data center 22 stories underground in an abandoned limestone mine, for example. Data centers have also been located in shipping containers and former nuclear bunkers — there's even one in an old bomb shelter under Uspenski Cathedral in Finland.

A Rocky Start

The water tank idea had its merits, but the city's journey to an optimized data center with a solid disaster recovery infrastructure didn't begin easily. In 2003, only three days after DiGioia moved from New York to Florida to start his Altamonte Springs IT job, the city's network engineer walked up to him and said, "We've just lost everything. All the Novell servers, the Novell clusters, the backup, the SAN. Everything's gone," he recalls.

At a Glance

- **City of Altamonte Springs, Fla.,** an Orlando suburb with about 45,000 residents.
- **Project champion:** Larry DiGioia, director of information services
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The city's only backup consisted of a server running Veritas Backup Exec to a Spectra Logic AIT-3 tape library. "Tapes are unreliable," DiGioia says. "Disaster recovery was nonexistent. It consisted of backup tapes in a box."

Over a two-and-a-half week period, DiGioia says, he was able to recover most of the city's data off the backup tape, but a significant amount was lost.

Things didn't get better after that. In 2004, Altamonte Springs was hit by Category 3 and 4 hurricanes Charley, Frances and Jeanne. City Hall and the data center within it were constructed to resist Category 1 hurricanes. To safeguard the IT equipment, everything had to be packed for each storm and placed into storage units until the storm passed.

"We literally had to dismantle everything. It was a horrible experience. The emergency operation center was shut down also because there wasn't infrastructure in place to support Internet access during a storm," DiGioia says.

He decided it was time to build a better infrastructure, one that would include a separate disaster recovery facility, keep critical backup data online, and support recovery point and recovery time objectives.

The water tank just seemed like a logical site, he says. It had been decommissioned a few years back and was built like a fortress.

First, DiGioia got buy-in from Altamonte Springs' political leaders. The city then commissioned the construction of two buildings on either side of the water tank; one wing now houses the networking equipment and the other has administrative offices.

In the old data center in City Hall, the networking infrastructure consisted of point-to-point T1 lines over copper wire to 16 facilities, such as the police department and public works offices. For the new data center, the city ran dark fiber (unused optical fiber that can be tapped into if necessary) to the same facilities; it also leased dark fiber from surrounding county governments, greatly increasing bandwidth and distance for disaster recovery.

DiGioia and his team also rolled out VMware ESX server software and reduced the physical server count from 80 boxes to 12 Dell quad-cores running 30 virtual machines. The servers were configured to boot from the SAN.

In the main data center, the city uses CommVault Simpana software to back up to a Xiotech Emprise 7000 SAN. Xiotech's TimeScale continuous data protection (CDP) system is then used to replicate that SAN to another Xiotech 7000 SAN at the city's disaster recovery site. Each of the SANs has 25TB of capacity. Xiotech's ICON Manager interface gives the IT team a single point of management for all of its storage activities.

"The SAN is mirrored, everything's virtualized, we have CDP," DiGioia says. "It's just a night-and-day experience."

Backups are kept on disk for 30 days and then overwritten, and tape is no longer used. Documents are archived on optical disc and microfilm.

Choosing a Partner

DiGioia says he selected Xiotech Corp. as his SAN vendor because its previous service on technology the city owned had been outstanding, and other vendors, including Hewlett-Packard and Dell, didn't seem interested in an operation as small as his. DiGioia says he also looked into using NetApp but felt it couldn't offer the level of service Xiotech could.

DiGioia says Xiotech demonstrated that it was "interested in the long haul" rather than "a hit-and-run" at Altamonte Springs. "Xiotech was extremely responsive to us. I have access to the right people," he says. "I've never had a problem with the device as a whole, and everything was always a smooth transition with them."

In order to meet recovery objectives for city's various departments, DiGioia met with each of them, determining their individual needs and tweaking systems to meet those needs.

The new, more highly automated infrastructure enabled the city to set up an online IT help desk, which is able to provide instant feedback on department service requests along with estimated times for ticket completions. "Before, we'd have problems and submit them and they'd get lost," Apfelback says.

The new data center also meant the fire department's and building office's Web sites and intranet would no longer experience three-to-four-day outages every month. With the increased bandwidth and reliability, DiGioia's office was also able to launch a new online building-permitting and inspection request system. Handling 1,100 to 1,400 inspection requests and up to 250 permit inquiries each month, the new online application system has streamlined how customers submit and track their requests.

"For our customers, they can go on online 24/7, 365 days a year and request inspections and see the status of their inspections," Apfelback says. "It's really brought us into the next century and where we need to be from a customer service standpoint, both internally and externally." ◆

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Security Manager's Journal

MATHIAS THURMAN

Keeping Things Simple for NAC

I'VE MENTIONED network access control several times in this column over the past few months. If you've been following along, you know that I like the functionality it offers but am leery of the difficulty and cost of deploying it, as well as the resources required to manage it properly.

What we stand to gain with NAC finally seems to outweigh the drawbacks, so I've decided to begin the groundwork for a NAC deployment. To that end, I've been holding weekly meetings with our network and security operations team to develop a network segmentation model, which is pretty much a mandatory precursor to a successful NAC deployment.

From a network point of view, ours is not a very complicated company. We don't have a storefront, we're not a software-as-a-service or cloud provider, and we don't have a decentralized business model or any other risky situations to warrant a complex network segmentation model. I want to keep the architecture uncomplicated, serving the simple goal of protecting the company's assets while providing entities with transparent access. You're probably wondering why I used the word "entities" instead of "users." It's because with NAC, you have to take into account not only human users, but also servers and peripherals such as printers, plotters, cameras, alarm systems and other devices that can talk some form of Ethernet.

For the sake of simplicity, then, we decided to create four quadrants: the data center, outside the data center, untrusted entities and special nets.

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The Four Quadrants

Let's start with the data center. We defined three tiers within it that should be familiar to you: Web tier, application tier and database tier. The idea is that we will segment those resources and place access controls (like a firewall) to limit access from one tier to another. For example, best practices dictate that in a production environment, Web servers should normally never directly communicate with database servers. We also identified a development and QA network that is further protected from the production network.

Trouble Ticket

The "outside the data center" quadrant comprises trusted entities that, while not part of the data center, have a relationship with it: employees, printers, wireless access points and so on. Some of our entities do not meet the criteria to be in this quadrant because they are untrusted.

Untrusted entities, constituting the third quadrant, are deemed to pose threats to the company and include unpatched resources and vendor representatives who come into the office to demo their products. For example, we have a slew of pesky engineering servers that have been added to the exception list for patches and antivirus software. They are untrusted for good reason, since they account for almost 80% of our security incidents. For them, we are creating stringent access rules that will be designed to prevent infected resources from impacting the production environment.

The special net quadrant includes the monitoring and security networks, which need very broad and unfettered access to all quadrants. We may also include in this quadrant peripherals such as cameras and alarm systems that need access but can't identify themselves in an intelligent manner.

Our quadrant identification exercise is just the beginning, and further refinement will be necessary. Once that is completed, we will start to evaluate technologies for their compatibility with our segmentation model, while taking into account our corporate infrastructure, budget and resources.

How about you? Do you have a NAC success story? Let me know. ◆

This week's journal is written by a real security manager, **"Mathias Thurman,"** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*

I have a simple goal: To protect company assets while providing transparent access.

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OPINION

BART PERKINS

Multiple-Biometric IDs: Dream or Reality?

India's unique ID system will rely on the world's largest database of individuals.

A UBIQUITOUS IDENTIFICATION system based on multiple biometrics has until now existed only in Hollywood movies. Today, India is attempting to make it a reality. Can the Indians pull it off?

The Unique Identification Authority of India's Aadhaar program, referred to as UID, will provide identity cards for that nation's 1.2 billion citizens. India's government now issues multiple special-purpose IDs, including a Permanent Account Number for income tax transactions, an Electors Photo Identity Card for voting, ration cards, health care cards, driver's licenses and passports. The UID will eventually replace all of those. The UID system will process hundreds of thousands of identity validation requests each second, against the world's largest database of individuals.

It's a huge project, with an estimated cost of $2.2 billion to $4.4 billion.

The UID will use multiple types of biometric data for identification, including retina scans, fingerprints for all 10 fingers, and multiple facial images. The system is so complex that no single company has all the required skills to develop it. A consortium of Accenture, MindTree (India), Daon (Ireland), and Neurotechnology (Lithuania) designed the biometric data capture, categorization, storage and retrieval processes.

The UID will yield significant benefits. Indians will need only one ID document for government services, banking and more. This is especially important for India's poor, many of whom can't access needed services because they can't prove their identity. Moreover, the government expects to save $4.3 billion annually with UID. By cross-referencing current systems and deduplicating databases, the government expects fraud to decline tremendously. The system will also reduce administrative costs associated with issuing multiple IDs and maintaining incompatible ID systems.

Critics, though, point to technological difficulties, compounded by social and environmental challenges. More than 70% of India's citizens live in villages with spotty electricity, and they may be wary of smart-card readers, say critics. And given India's 30% illiteracy rate, many people will be unable to read prompts. In addition, an environment that includes dust, large temperature swings and monsoons requires rugged and highly reliable equipment.

Other critics fear erosion of civil liberties. Misused, a national database could allow police or intelligence groups to discriminate against people by caste, religion or birthplace. According to *The Wall Street Journal*, "Numerous social studies show that knowledge of these identifiers adversely impacts delivery of services such as education and health care to disadvantaged citizens." Others worry that security will be inadequate. In November 2009, WikiLeaks published an internal working paper stating, "The UID Database will be susceptible to attacks and leaks at various levels."

Critics' arguments notwithstanding, IT organizations worldwide should monitor this impressive project. Begun in 2009, the 18-month initiative is a month ahead of schedule; pilot deployments begin this fall. If successful, the Aadhaar will have several byproducts. Other countries will likely adapt and adopt India's technology. In addition, the lesser-known companies contributing to the UID project will gain global recognition. And the concept of multiple-biomarker identification tools will be catapulted out of the movies and into everyday use. How long until your CEO demands them in your company's security systems? ◆

Bart Perkins is managing partner at Louisville, Ky.-based Leverage Partners Inc., which helps organizations invest well in IT. Contact him at BartPerkins@LeveragePartners.com.

Career Watch

Q&A

Dan Hoffman

The CEO of **M5 Networks** *explains why the company is paying for every employee to learn a musical instrument.*

What is the rationale for paying for your employees to learn musical instruments – and on company time? We call this program "M5 Rock." It's a fun way to reinforce some of the things that are really important to us as a company, like teamwork, listening to each other and, most importantly, learning. This is one of our core values. We grow as a company as fast as our people grow. People forget how to learn – they forget to practice, they forget how to grapple with something uncomfortable until your body can do it as muscle memory. The program pushes people into a groove of learning that pays big dividends as they go back to learn to sell, support, manage projects, write code and so on.

What is M5 Networks' philosophy on training? First of all, we believe training and learning is one of the most satisfying and fun things you can do at work – good for staff, good for the company. But you can't read a manual or attend a training seminar and expect it to stick. Real learning must have three elements: repetition, recursion and reciprocation. We design our training programs as themes that last many months on any topic. Recursion means we go after the same thing from many different angles, the way a word has more than one definition in the dictionary. Finally, you have to write or talk or work with the material, and this makes learning a team sport, well suited for a work environment.

Are there measurable effects, such as low turnover? We do have low turnover, but that's not the goal. In fact, we are happy when staff grow their careers with us and then move on. The most measurable effect is that staff that learn faster can do more and more and more. In 2007, we had about $150,000 of revenue per person. In 2010, we'll do almost $300,000 per person. There's real leverage in learning!

– JAMIE ECKLE

A NEW JOB SITE

The latest option for getting your virtual résumé in front of technical recruiters and employers is the TechPlayr job-search engine, recently launched nationwide by [illegible] LLC. As the name implies, TechPlayr is strictly for technical employees. Costs are paid by the recruiters and employers that search résumés on the site, TechPlayr.com.

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50 Hot IT Skills on the Rise

Here are the 25 certifications and noncertified skills most likely to increase in value over the next six months, as determined by Foote Partners LLC. But President David Foote cautions, "There is simply no such thing as a reliable six-month IT labor forecast in these volatile market conditions."

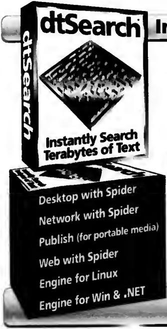
IT Certifications

1. SAS Certified Base Programmer
2. Red Hat Certified Security Specialist
3. CompTIA Security+
4. SAS Certified Advanced Programmer
5. VMware Certified Professional
6. GIAC Security Essentials Certification
7. Citrix Certified Enterprise Administrator
8. Cisco Certified Network Professional
9. Cisco Certified Internetwork Professional
10. Red Hat Certified Technician
11. HP Accredited Integration Specialist
12. Microsoft Certified Professional Developer (all)
13. Sun Certified Systems Administrator for Solaris
14. Microsoft Certified Database Administrator
15. Cisco Certified Design Professional
16. GIAC Certified Incident Handler
17. CyberSecurity Forensic Analyst
18. Certification Authorization Professional
19. Microsoft Certified Technology Specialist (virtualization)
20. GIAC Security Audit Essentials
21. GIAC Secure Software Programmer
22. IBM Certified Specialist – AIX Basic Ops
23. Avaya Certified Specialist
24. Check Point Certified Security Administrator
25. GIAC Certified Windows Security Administrator

Noncertified IT Skills

1. SAP Basis components
2. RAD/extreme programming/agile programming
3. Virtual private networks
4. Business continuity and disaster recovery planning
5. Web 2.0 skills (AJAX, Adobe Flex, Adobe Flash, JavaScript, JSON)
6. Windows 7
7. SAP Web Application Server
8. SAN/storage administration
9. RFID/wireless sensors
10. Python
11. HTML/DHTML/XHTML
12. Business performance management software/systems
13. SAP BPC (Business Planning and Consolidation)
14. SAP EBP (Enterprise Buyer Professional)
15. SAP FI - FSCM (Financial Accounting - Financial Supply Chain Management)
16. Linux
17. Ruby/Ruby on Rails
18. Social networks (tagging, virtual communities, social bookmarking, etc.)
19. SAP SCM (Supply Chain Management)
20. SAP SRM (Supplier Relationship Management)
21. ITIL v3 Foundation
22. SAP WM (Warehouse Management)
23. Web Dynapro
24. SAP APO (Advanced Planner and Optimizer)
25. SAP PP (Production Planning)

SOURCE: FOOTE PARTNERS IT SKILLS AND CERTIFICATIONS HOT LISTS, JULY 2010. RANKINGS ARE BASED ON INTERVIEWS WITH HUNDREDS OF EXECUTIVES AND PRIMARY DECISION-MAKERS FROM THE 2,000 COMPANIES IN FOOTE'S DATABASE OF RESEARCH PARTNERS.



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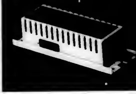

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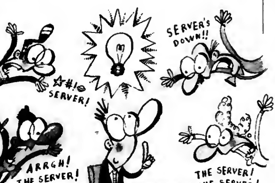
SERVER'S DOWN!!
$#!@ SERVER!
ARRGH! THE SERVER!
THE SERVER! THE SERVER!
HAL MAYFORTH

Wanna Bet?

Small company has a one-person IT department: this pilot fish. "My office was also the server room," fish says. "The upside was always being toasty warm and having line-of-sight to the servers and other networking equipment. This proved handy when somebody would call or run by my office to report, 'The server is down!' While occasionally things really did go wrong, 'The server is down' was a phrase that was generally used to get my attention for just about any technical issue."

Eventually, all of that crying wolf gets old. Fortunately, fish comes up with a solution – and with the CEO's blessing, he makes an announcement at an all-company meeting. "I am implementing a new policy, effective immediately," fish tells the employees. "Every time the server goes down, and you are the first person to alert me, I will give you $10." There's happy murmuring from the crowd, until fish continues: "However, if you tell me the server is down and we find it is not, *you* will give me $10." Reports fish: "The server was never down again. Ever."

Get the Picture?

The Anna Kournikova virus hits this IT shop's Exchange server first thing in the morning. "We got all 100 or so users out of e-mail, cleaned things up and patched everything," reports a pilot fish on the scene. "After a couple of hours, we were ready to go again. I personally walked through the executive wing and let everyone know they could get back into their e-mail. Before I could get back to the server room, one of our techs met me at the door with a frightened look. 'It's back,' he said. 'We must have missed something!' When I looked at the log, it all originated from one executive. We pulled the plug on the server and started all over again. Then I went to the executive to find out what happened. He said, and I quote, 'I didn't get to see her pictures the first time.'"

Credit Where It's . . .

One of this company's paper-shuffling departments gets a new employee who plugs in his space heater on the circuit that powers all the department's PCs – and naturally he calls this IT support pilot fish for help when the circuit is blown. "He called me to fix the circuit because it's the one their computers were plugged into," sighs fish. I asked, Does your radio play? He said no. I told him I'd call maintenance. A few minutes later he told me to never mind, because one of our *programmers* had fixed the problem. What did he do? I asked. 'He flipped some switch,' the guy told me. Turns out the programmer showed up at the same time as maintenance."

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OPINION

SCOT FINNIE

5 Trends to Watch in 2011

The killer business trends are the ones that go unnoticed and wind up being transformational.

WOULD YOU recognize a significant IT business trend if you saw one? Over the years, many products, technologies and IT-related business trends have been hyped beyond their significance. But the killers are the ones that go unnoticed and wind up being transformational. It's difficult to know the difference, but there's an old journalism adage: *Follow the money.* With that in mind, here are five things to keep an eye on as we march toward 2011.

1. The recession is transformational. Since late 2008, many companies facing reduced top-line growth have eked out profits with deep cuts. In many cases, those savings have been held aside, awaiting the right moment. Odds are, that moment will come in 2011. For IT shops, business growth could require new technology, but additional IT resources may not be added as quickly. Senior IT leaders should be planning now how to meet the demands of anxious CEOs with smaller staffs and shorter timelines.

2. The spotlight remains on cost-saving technologies. Given the recession, it's no surprise that virtualization, the head-slappingly obvious money-saver that was hot well before the recession, is even hotter now. A year ago, Gartner named it the No. 1 technology for 2010, based on a survey of CIOs. I'd put it there again for 2011, followed by cloud computing, software as a service and, to a lesser degree, business analytics.

In *Computerworld*'s Forecast 2011 survey (see our Sept. 13 issue), respondents said cloud computing is the most overhyped technology, but they also said it's No. 2 on the list of technologies with the most promise for 2011. Both sentiments are true. Cloud computing holds even more potential for cost savings than virtualization, but is it ready for prime time? And cost savings might not even be the cloud's main advantage. Its biggest benefit might be the fact that it makes it possible to provision server and storage capacity quickly.

3. Mobile is exploding. Everyone can see this. But are IT shops focused on the management, support and security challenges that come with mobile computing? A huge percentage of employees are bringing personal quick-access storage devices to work and putting sensitive documents and e-mails on them. And here come tablets. Over 30 new tablets were announced or delivered in 2010, and they're inexpensive enough that a lot of people are buying them.

4. Software is undergoing rapid change. Take the public-cloud phenomenon and stir in largely Web-based mobile applications, and you'll see the start of a software trend that could transform the way we work. When you connect meaningful enterprise data to tablet computers served via your data center, private cloud or hybrid cloud, you've got a transformational technology. For years we've been trying to unchain knowledge workers from their desks so they can interact with one another and work wherever they go. There is a potential to create near-real-time business communication without us having to work at that full time. The days of large, monolithic, LAN-connected, proprietary enterprise apps are numbered

5. Enterprise 2.0 will run its course. Crowd-sourcing information (the real value of Web 2.0 for the enterprise) is a powerful tool. It's a simple way to help us avoid starting every new undertaking from scratch. It shapes ideas and provides valuable insights. And it's on its way to becoming pervasive. But it's *not* a technology; it's more like a business strategy. The hype surrounding Web 2.0 technologies will die down, and business use of these tools won't be thought of as a key trend in 2011. ◆

Scot Finnie is *Computerworld*'s editor in chief. You can contact him at sfinnie@computerworld.com, and follow him on Twitter (@ScotFinnie).

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- Integrated Lights-Out 3 (iLO 3) providing industry-leading management and 8X faster remote console performance

$2,599 (Save $498)

Lease for just $69/mo.*

Buy (PN: 605869-005)

HP ProLiant BL465c G7 Server

- AMD Opteron™ Processor Model 6128HE
- 8 GB memory, up to 256 GB max
- Up to two (2) hot plug small form factor SAS, SATA, or SSD drives
- Integrated Lights-Out 3 (iLO 3) providing industry-leading management and 8X faster remote console performance
- Two Integrated HP Virtual Connect FlexFabric Converged Network Adapters

Starting at $3,079

Lease as low as $88/mo.*

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[1,2]For details on claim substantiations, visit hp.com/servers/unleash5

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